UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

California Water Supply Outlook Report

April 1, 2020

Contents

California Forecast Basins, Major Rivers, and Large Reservoirs (Map)……..3

State of California General Outlook ……4

Streamflow Forecasts:

Sacramento River Basin ……...5

San Joaquin River Basin ……7

Tulare Lake Basin ……9

North Coastal Area Basin ……10

Klamath Basin ……11

Lake Tahoe Basin ……12

Truckee River Basin ……14

Carson River Basin ……16

Walker River Basin ……18

Owens River Basin ……20

Surprise Valley-Warner Mtns ……21

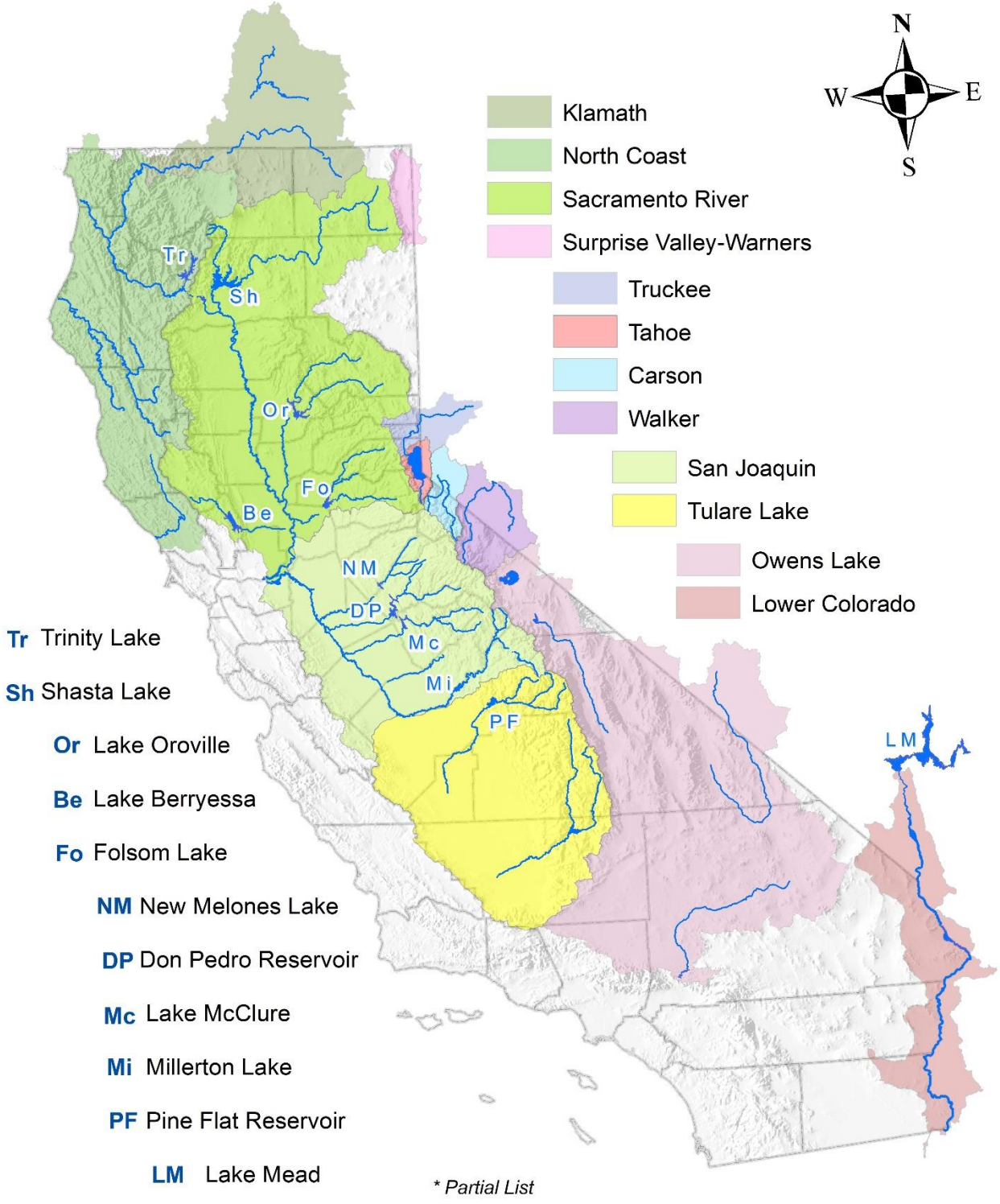
Lower Colorado River Basin ……22

How Forecasts are Made ……23

Cover: Rubicon #1 Snow Course (elev. 8,100 ft) on March 26, 2020. The team (including Evan Smith, shown on right) measured a snow depth of 103 inches with a Snow Water Equivalent of 29.7 inches. For comparison, snow depth and Snow Water Equivalent at Rubicon #1 on February 28, 2020 was 62 inches and 23.3 inches, respectively. SNOTEL and Snow Course data are available online at https://www.wcc.nrcs.usda.gov/snow/ .

Photos courtesy Evan T. Smith

California Forecast Basins, Major Rivers, and Large Reservoirs*



STATE OF CALIFORNIA GENERAL OUTLOOK
April 1, 2020

SUMMARY
Dry conditions that set records in February continued through mid-March, reducing statewide snowpack to as low as 36 percent of normal on March 14th. Subsequent storms boosted average snowpack to just above 50 percent of normal by month's end- not quite a "March Miracle," but certainly welcome. Precipitation indices for the three regions were below average- to average in March, but it was enough to nudge cumulative seasonal totals over the 50 percent line. Statewide reservoir storage (excluding Lake Powell and Lake Mead in the Colorado River Basin) slipped to just under 100 percent.

SNOWPACK
Average snowpack in California's northern-, central-, and southern- regions were 57-, 58-, and 45 percent of normal for March 31st, respectively. The gradual rise in average snowpack for the three regions that started mid-March has continued into the first part of April.

More information is available online at http://cdec.water.ca.gov/snow/current/snow/index2.html.

PRECIPITATION
After a parching February, the northern Sierra-, San Joaquin- and Tulare Basin regions received between 75- to 100 percent of average in March. For the season, all three regions have received between 50- and 55 percent of average precipitation through March. The storm track shifted southward in late March and has persisted through early April, bringing locally drenching rains and mountain snow to Southern California, kicking off April's totals with a promising start.

More information is available online at http://cdec.water.ca.gov/snow_rain.html

RESERVOIRS
By March 31st, total storage in California's major reservoirs (excluding Lake Powell and Lake Mead) dropped slightly to 99 percent of average. Storage in Shasta Dam held at 98 percent of average, while Don Pedro Reservoir storage dropped slightly to 113 percent of the historical average. Storage in Lake Mead held at 44 percent of capacity, with forecast inflows into Lake Powell between April and July estimated at 78 percent of average.

More information is available online at http://cdec.water.ca.gov/snow/reservoir_ss.html.

STREAMFLOW
Streamflow forecasts for all regions are below average. National Weather Service and CA Department of Water Resources forecasts (April through July) for stations in the Sacramento, San Joaquin, and Tulare basins, range between 32- and 94 percent of average, with Tulare Basin forecasts generally being the lowest. NRCS forecasts for stations in the Tahoe, Truckee, Carson, and Walker River basins (APR-JUL or APR-AUG) range between 33- and 60 percent of average. Summaries are provided below.

Sacramento River Basin

National Weather Service (NWS) streamflow forecasts at 13 sites range between 49- and 94 percent of average between April and July (APR-JUL). Department of Water Resources (*DWR*) streamflow forecasts for APR-JUL at 18 sites range between 47- and 72 percent of average.

SACRAMENTO RIVER BASIN
Streamflow Forecasts - April 1, 2020

Forecast Point	Forecast Period	Forecast Exceedance Probabilities for Risk Assessment: Chance that actual volume will exceed forecast — 90% (KAF)	70% (KAF)	50% (KAF)	50% (% AVG.)	30% (KAF)	10% (KAF)	30 Yr Avg (KAF)
Sacramento R at Shasta (DWR)								
	APR-JUL			*140*	***47***			*295*
Sacramento R at Shasta (NWS)								
	APR-JUL	103	119	153	**49**	196	260	312
McCloud R ab Shasta (DWR)								
	APR-JUL			*270*	***70***			*385*
McCloud R ab Shasta (NWS)								
	APR-JUL	229	244	262	**68**	300	331	385
Pit R at Shasta Lk (DWR)								
	APR-JUL			*730*	***72***			*1020*
Pit R at Shasta Lk (NWS)								
	APR-JUL	632	672	707	**70**	779	879	1013
Inflow to Shasta Lk (DWR)								
	OCT-SEP	*3075*		*3415*	***59***		*3730*	*5831*
	APR-JUL	*920*		*1190*	***68***		*1430*	*1756*
Inflow to Shasta Lk (NWS)								
	APR-JUL	1104	1214	1364	**76**	1535	1842	1803
Sacramento R nr Red Bluff (*DWR*)								
	OCT-SEP	4090		4450	**52**		4880	8544
	APR-JUL	1100		1390	**57**		1720	2421
Sacramento R nr Red Bluff (NWS)								
	APR-JUL	1488	1642	1850	**75**	2082	2621	2479
Feather R at Lk Almanor (DWR)								
	APR-JUL			*200*	***60***			*333*
NF Feather R at Pulga (DWR)								
	APR-JUL			*590*	***57***			*1028*
NF Feather R nr Prattville (NWS)								
	APR-JUL	163	180	193	**58**	209	239	333
MF Feather R nr Clio (DWR)								
	APR-JUL			*50*	***58***			*86*
SF Feather R at Ponderosa Dam (DWR)								
	APR-JUL			*65*	***59***			*110*

Sacramento River Basin cont'd

SACRAMENTO RIVER BASIN
Streamflow Forecasts - April 1, 2020

Forecast Point / Forecast Period	Forecast Exceedance Probabilities for Risk Assessment: Chance that actual volume will exceed forecast — 90% (KAF)	70% (KAF)	50% (KAF)	(% AVG.)	30% (KAF)	10% (KAF)	30 Yr Avg (KAF)
Inflow to Oroville Res (DWR)							
OCT-SEP	*2010*		*2320*	***53***		*2575*	*4407*
APR-JUL	*720*		*1000*	***59***		*1220*	*1704*
Inflow to Oroville Res (NWS)							
APR-JUL	875	971	1116	**66**	1333	1629	1701
N Yuba R bl Goodyears Bar (DWR)							
APR-JUL			*175*	***63***			*279*
N Yuba R bl Goodyears Bar (NWS)							
APR-JUL	138	156	186	**68**	223	256	273
Inflow Jackson Mdws & Bowman Res (DWR)							
APR-JUL			*70*	***63***			*112*
S Yuba R nr Langs Crossing (DWR)							
APR-JUL			*145*	***62***			*233*
Yuba R at Smartville (DWR)							
OCT-SEP	*920*		*1120*	***49***		*1250*	*2268*
APR-JUL	*420*		*610*	***63***		*730*	*968*
Yuba R at Smartville (NWS)							
APR-JUL	497	567	665	**68**	828	983	981
NF American R at N FK Dam (DWR)							
APR-JUL			*160*	***61***			*262*
MF American R nr Auburn (DWR)							
APR-JUL			*330*	***63***			*522*
MF American R nr Auburn (NWS)							
APR-JUL	344	376	431	**88**	494	597	490
Inflow to Union Valley Res (NWS)							
APR-JUL	71	78	87	**89**	99	118	98
Silver Ck bl Camino Div. Dam (DWR)							
APR-JUL			*105*	***61***			*173*
Silver Ck bl Camino Div. Dam (NWS)							
APR-JUL	121	131	148	**94**	169	199	158
Inflow to Folsom Res (DWR)							
OCT-SEP	*1030*		*1285*	***49***		*1460*	*2626*
APR-JUL	*500*		*750*	***63***		*920*	*1199*
Inflow to Folsom Res (NWS)							
APR-JUL	769	856	991	**80**	1153	1443	1232

Averages are based on 1981-2010 reference period

1) 90% and 10% exceedance probabilities are actually 95% and 5%
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

San Joaquin River Basin

National Weather Service (NWS) streamflow forecasts at eight sites range between 55- and 79 percent of average between April and July (APR-JUL). Department of Water Resources (*DWR*) streamflow forecasts for APR-JUL at 13 sites range between 43- and 63 percent of average.

SAN JOAQUIN RIVER BASIN
Streamflow Forecasts - April 1, 2020

Forecast Point / Forecast Period	Forecast Exceedance Probabilities for Risk Assessment: Chance that actual volume will exceed forecast — 90% (KAF)	70% (KAF)	50% (KAF)	50% (% AVG.)	30% (KAF)	10% (KAF)	30 Yr Avg (KAF)
Cosumnes R at Michigan Bar (DWR)							
OCT-SEP	*115*		*150*	***40***		*190*	*379*
APR-JUL	*40*		*70*	***56***		*105*	*125*
Cosumnes R at Michigan Bar (NWS)							
APR-JUL	76	85	101	**79**	126	164	128
NF Mokelumne R nr West Point (DWR)							
APR-JUL			*270*	***62***			*437*
Inflow to Pardee Res (DWR)							
OCT-SEP	*320*		*405*	***54***		*480*	*748*
APR-JUL	*210*		*290*	***63***		*360*	*457*
Inflow to Pardee Res (NWS)							
APR-JUL	250	289	323	**69**	362	441	467
MF Stanislaus R bl Beardsley (DWR)							
APR-JUL			*190*	***57***			*334*
Inflow to New Melones Res (DWR)							
OCT-SEP	*510*		*610*	***53***		*720*	*1149*
APR-JUL	*290*		*390*	***57***		*490*	*682*
Inflow to New Melones Res (NWS)							
APR-JUL	403	449	533	**77**	610	699	690
Cherry & Eleanor Cks, Hetch Hetchy (DWR)							
APR-JUL			*160*	***51***			*315*
Tuolumne R nr Hetch Hetchy (DWR)							
APR-JUL			*320*	***53***			*604*
Tuolumne R nr Hetch Hetchy (NWS)							
APR-JUL	314	342	385	**65**	425	460	596
Inflow to New Don Pedro Res (DWR)							
OCT-SEP	*795*		*895*	***47***		*1005*	*1909*
APR-JUL	*520*		*620*	***52***		*720*	*1193*
Inflow to New Don Pedro Res (NWS)							
APR-JUL	677	752	872	**71**	979	1085	1228

San Joaquin River Basin, cont'd

SAN JOAQUIN RIVER BASIN
Streamflow Forecasts - April 1, 2020

Forecast Point	Forecast Period	Forecast Exceedance Probabilities for Risk Assessment: Chance that actual volume will exceed forecast — 90% (KAF)	70% (KAF)	50% (KAF)	50% (% AVG.)	30% (KAF)	10% (KAF)	30 Yr Avg (KAF)
Merced R, Pohono Bridge Yosemite(DWR)								
	APR-JUL			*160*	***43***			*372*
Merced R, Pohono Bridge Yosemite (NWS)								
	APR-JUL	169	196	233	**61**	264	285	384
Inflow to Lake McClure (NWS)								
	APR-JUL	245	286	354	**55**	422	498	642
San Joaquin R at Mammoth Pool (DWR)								
	APR-JUL			*480*	***47***			*1026*
Big Ck bl Huntington Lk (DWR)								
	APR-JUL			*40*	***44***			*91*
SF San Joaquin R nr Florence Lk (DWR)								
	APR-JUL			*90*	***45***			*201*
Inflow to Millerton Lk (DWR)								
	OCT-SEP	*635*		*775*	***43***		*925*	*1793*
	APR-JUL	*430*		*560*	***46***		*700*	*1228*
Inflow to Millerton Lk (NWS)								
	APR-JUL	532	627	724	**58**	872	979	1258

Averages are based on 1981-2010 reference period

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

Tulare Lake Basin

National Weather Service (NWS) streamflow forecasts at four sites range between 32- and 47 percent of average between April and July (APR-JUL). Department of Water Resources (*DWR*) streamflow forecasts for APR-JUL at six sites range between 32- and 58 percent of average.

TULARE LAKE BASIN
Streamflow Forecasts - April 1, 2020

Forecast Point / Forecast Period	Forecast Exceedance Probabilities for Risk Assessment: Chance that actual volume will exceed forecast — 90% (KAF)	70% (KAF)	50% (KAF)	(% AVG.)	30% (KAF)	10% (KAF)	30 Yr Avg (KAF)
NF Kings R nr Cliff Camp (DWR)							
APR-JUL			*100*	***42***			*239*
Inflow to Pine Flat Res (DWR)							
OCT-SEP	*615*		*765*	***45***		*905*	*1702*
APR-JUL	*390*		*530*	***44***		*660*	*1210*
Inflow to Pine Flat Res (NWS)							
APR-JUL	517	587	705	**57**	828	959	1231
Kaweah R at Terminus Res (DWR)							
OCT-SEP	*150*		*175*	***39***		*200*	*451*
APR-JUL	*90*		*110*	***39***		*130*	*285*
Kaweah R at Terminus Res (NWS)							
APR-JUL	119	137	168	**58**	216	246	288
Tule R at Success Res (DWR)							
OCT-SEP	*50*		*34*	***40***		*60*	*147*
APR-JUL	*11*		*20*	***32***		*26*	*63*
Tule R at Success Res (NWS)							
APR-JUL	13	17	20	**32**	28	35	63
Kern R nr Kernville (DWR)							
APR-JUL			*180*	***47***			*384*
Inflow to Isabella Res (DWR)							
OCT-SEP	*345*		*390*	***54***		*425*	*728*
APR-JUL	*170*		*210*	***46***		*240*	*458*
Inflow to Isabella Res (NWS)							
APR-JUL	167	197	222	**49**	256	292	454

Averages are based on 1981-2010 reference period

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

North Coastal Area Basin

Streamflow forecasts for sites in the North Coastal Area Basin between April and July (APR-JUL) range between 32- and 47 percent of average.

NORTH COASTAL AREA
Streamflow Forecasts - April 1, 2020

Forecast Point	Forecast Period	Forecast Exceedance Probabilities for Risk Assessment: Chance that actual volume will exceed forecast — 90% (KAF)	70% (KAF)	50% (KAF)	(% AVG.)	30% (KAF)	10% (KAF)	30 Yr Avg (KAF)
Trinity R at Lewiston (DWR)								
	OCT-SEP	*435*		*515*	***38***		*580*	*1348*
	APR-JUL	*185*		*260*	***41***		*320*	*639*
Inflow to Clair Engle Lk (NWS)								
	APR-JUL	231	267	36	**47**	405	475	666
Scott R nr Fort Jones (NWS)								
	APR-JUL	37	44	56	**32**	72	88	173

Averages are based on 1981-2010 reference period

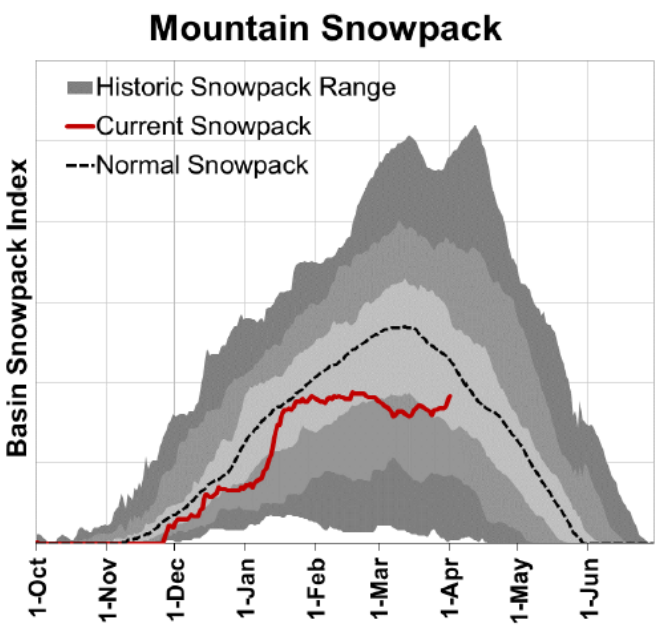
1) 90% and 10% exceedance probabilities are actually 95% and 5%

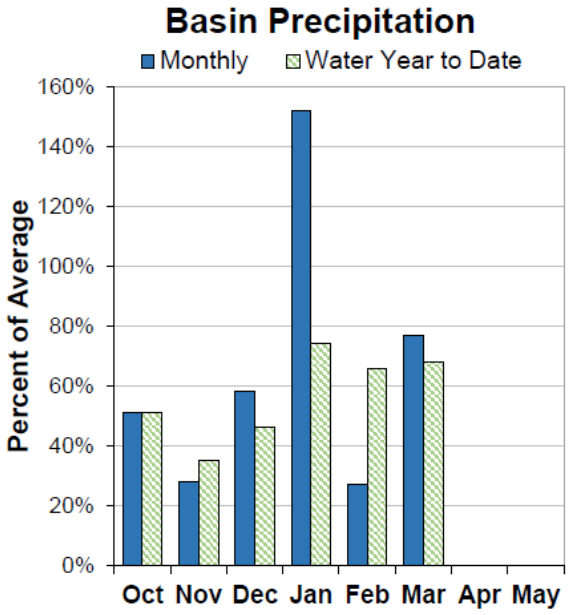
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

Klamath Basin

Including information from the Water Supply Outlook Report for Oregon
(https://www.nrcs.usda.gov/wps/portal/nrcs/detail/or/snow/?cid=nrcs142p2_048083):

As of April 1, the basin snowpack was 78% of normal. This is higher than last month when the snowpack was 66% of normal. March precipitation was 77% of average. Precipitation since the beginning of the water year (October 1 - April 1) has been 68% of average. As of April 1, storage at major reservoirs in the basin ranges from 88% of average at Clear Lake to 112% of average at Gerber Reservoir. The April through September (APR-SEP) streamflow forecasts in the basin range between 42% and 68% of average.





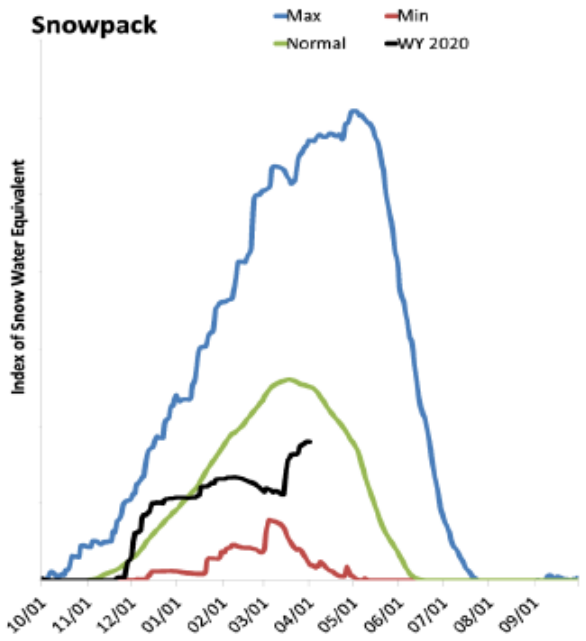
KLAMATH RIVER BASIN
Streamflow Forecasts - April 1, 2020

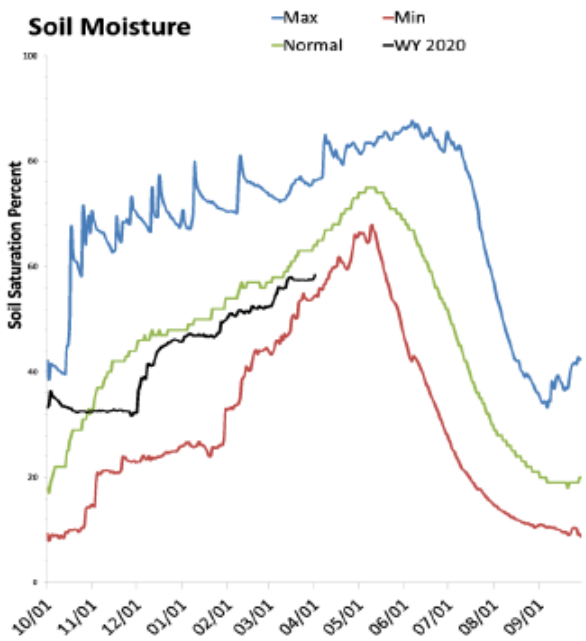
Forecast Point	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	(% AVG.)	30% (KAF)	10% (KAF)	30 Yr Avg (KAF)
		Forecast Exceedance Probabilities for Risk Assessment Chance that actual volume will exceed forecast						
Gerber Resv Inflow								
	APR-JUL	0	0.35	5.9	**42**	11.4	19.5	14.0
	APR-SEP	0	0.43	6.0	**42**	11.5	19.7	14.4
Sprague R nr Chiloquin								
	APR-SEP	77	107	125	**60**	147	177	210
Williamson R bl Sprague R nr Chiloquin								
	APR-SEP	174	210	240	**68**	260	295	355
Upper Klamath Lake Inflow								
	APR-SEP	176	255	290	**62**	325	405	465

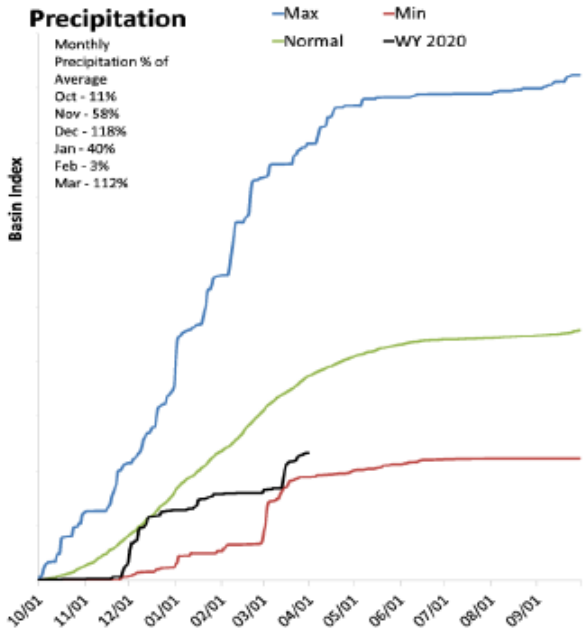
Lake Tahoe Basin

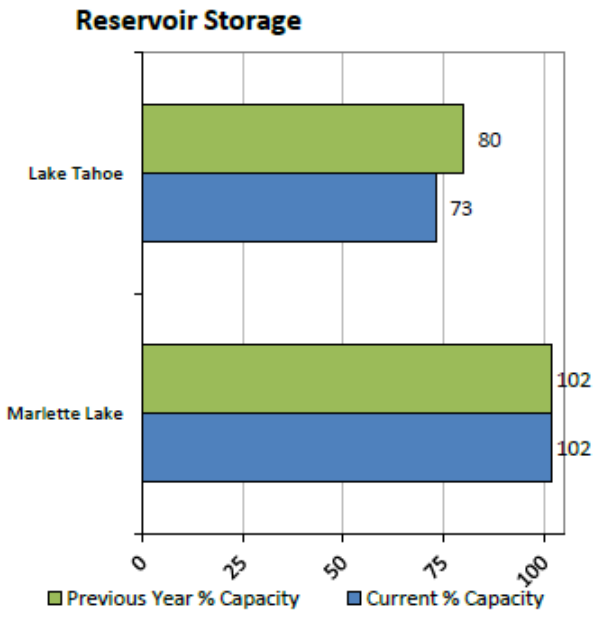
From the Water Supply Outlook Report for Nevada
(https://www.nrcs.usda.gov/wps/portal/nrcs/main/nv/snow/):

Snowpack in the Lake Tahoe Basin is below normal at 71% of median, compared to 170% last year. Precipitation in March was above average, which brings the seasonal accumulation (Oct-Mar) to 62% of average. Soil moisture is at 58% saturation, compared to 63% last year. Lake Tahoe's water elevation is 6227.47 ft, which is 4.47 ft above the lake's natural rim and equals a storage of 544.3 thousand acre-feet. Last year its elevation was 6227.88 ft which equaled a storage of 594.6 thousand acre-feet. Lake Tahoe is forecast to rise 0.7 feet from April 1 to its highest elevation, which means it is unlikely to completely fill this year.









Lake Tahoe Basin (cont'd)

LAKE TAHOE BASIN
Streamflow Forecasts - April 1, 2020

Forecast Point / Forecast Period	Forecast Exceedance Probabilities for Risk Assessment: Chance that actual volume will exceed forecast — 90% (KAF)	70% (KAF)	50% (KAF)	(% AVG.)	30% (KAF)	10% (KAF)	30 Yr Avg (KAF)
Marlette Lake Inflow (Acre-Ft) (2)							
APR-JUL	-220	140	380	**46**	630	990	830
MAY-JUL	-420	-70	150	**28**	400	760	540
Tahoe River Gates Closed (1)							
APR-HIGH	0.14	0.524	0.7	**53**	0.876	0.876	1.31
MAY-HIGH	0.11	0.32	0.5	**46**	0.68	1.08	1.08
Tahoe Lake Net Inflow (2)							
APR-JUL	12.4	50	75	**52**	100	138	144.6

Averages are based on 1981-2010 reference period

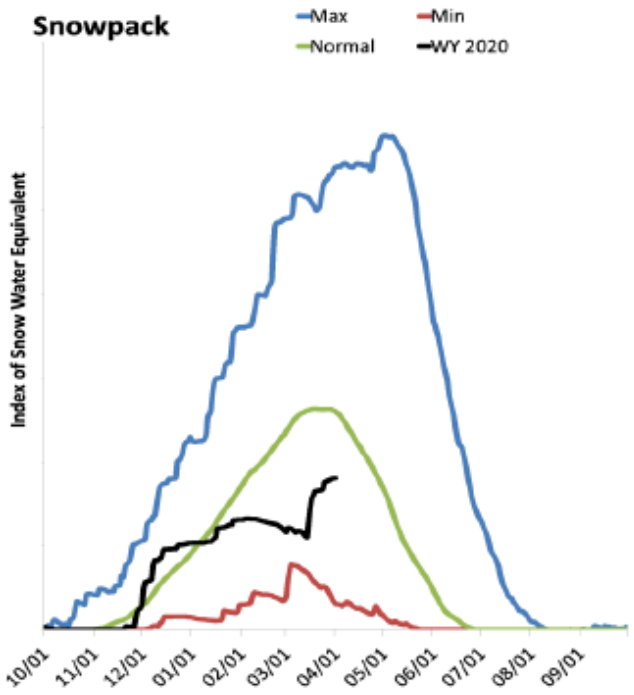
1) 90% and 10% exceedance probabilities are actually 95% and 5%

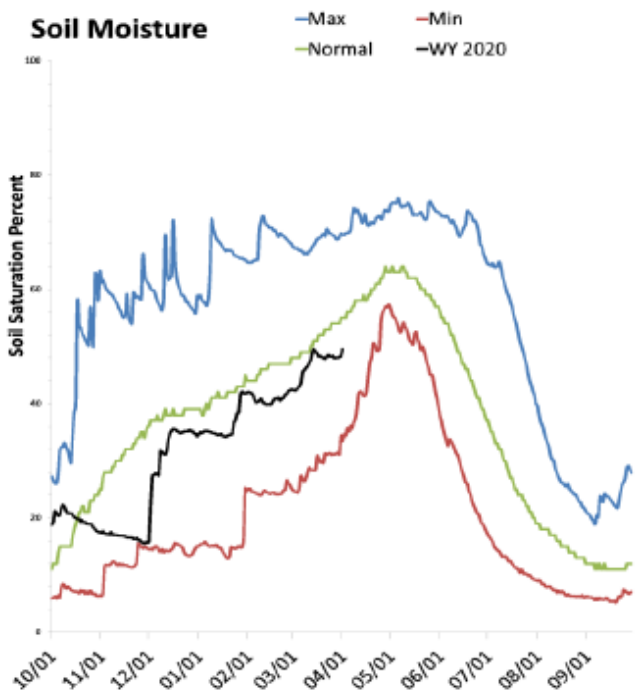
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

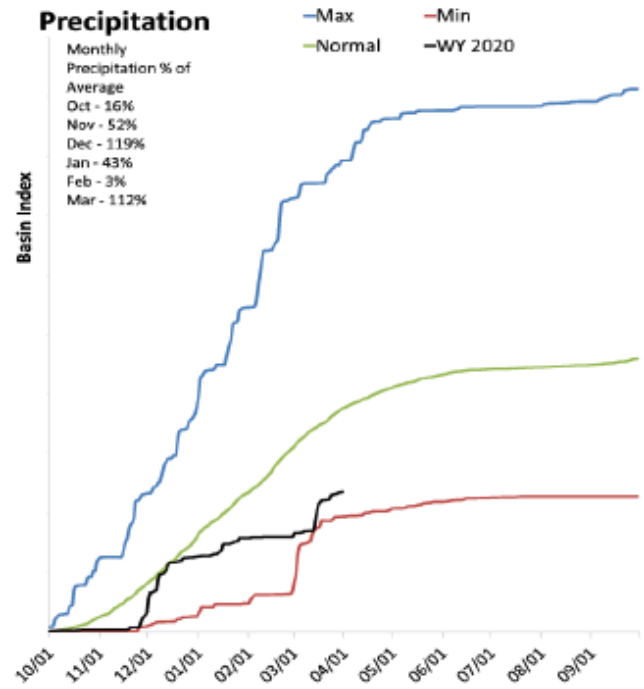
Truckee River Basin

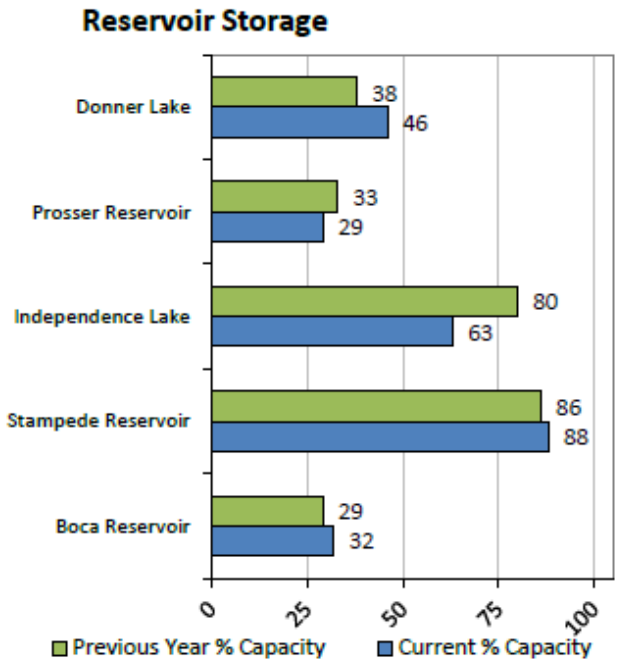
Including information from the Water Supply Outlook Report for Nevada
(https://www.nrcs.usda.gov/wps/portal/nrcs/main/nv/snow/):

Snowpack in the Truckee River Basin is below normal at 72% of median, compared to 176% last year. Precipitation in March was above average, which brings the seasonal accumulation (Oct-Mar) to 63% of average. Soil moisture is at 49% saturation, compared to 54% last year. Combined reservoir storage is 73% of capacity , the same as last year at this time. Forecast streamflow volumes between April and July (APR-JUL) range from 33% to 53% of average.









Truckee River Basin (cont'd)

TRUCKEE RIVER BASIN
Streamflow Forecasts - April 1, 2020

Forecast Point	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	(% AVG.)	30% (KAF)	10% (KAF)	30 Yr Avg (KAF)
		Forecast Exceedance Probabilities for Risk Assessment Chance that actual volume will exceed forecast						
Donner Lake Inflow								
	APR-JUL	1.91	4.2	5.8	**33**	7.4	9.7	17.8
	MAY-JUL	0.61	2.1	3.8	**31**	5.6	8.1	12.2
Martis Ck Res Inflow								
	APR-JUL	0.56	1.9	3.5	**37**	5.1	7.5	9.4
	MAY-JUL	0.057	0.62	1.7	**30**	3.3	5.6	5.7
Prosser Ck Res Inflow								
	APR-JUL	9.9	14.7	18	**42**	21	26	43
	MAY-JUL	4	9	12.4	**40**	15.8	21	31
Independence Lk Inflow								
	APR-JUL	2.2	3.9	5	**41**	6.1	7.8	12.1
	MAY-JUL	1.23	2.8	3.9	**39**	5	6.7	9.9
Sagehen Ck nr Truckee								
	APR-JUL	1.5	1.72	1.9	**34**	2.1	2.4	5.6
	MAY-JUL	0	0	1	**24**	1.1	1.26	4.2
Stampede Res Local Inflow								
	APR-JUL	14	27	36	**47**	45	58	76
	MAY-JUL	2.7	10.6	21	**39**	31	47	54
L Truckee R ab Boca Resv								
	APR-JUL	20	29	38	**43**	42	55	88
	MAY-JUL	1.24	10.1	22	**35**	34	51	62
Truckee R at Farad								
	APR-JUL	75	111	135	**53**	154	185	255
	MAY-JUL	17.2	55	81	**44**	107	145	183

Averages are based on 1981-2010 reference period

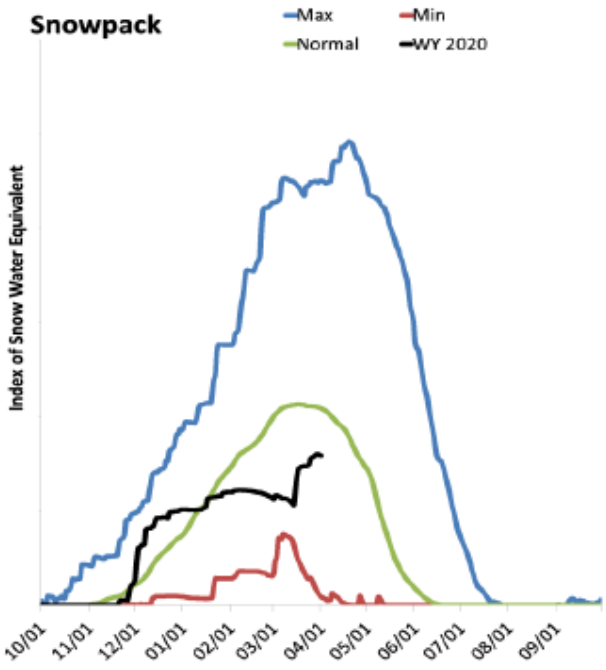
1) 90% and 10% exceedance probabilities are actually 95% and 5%

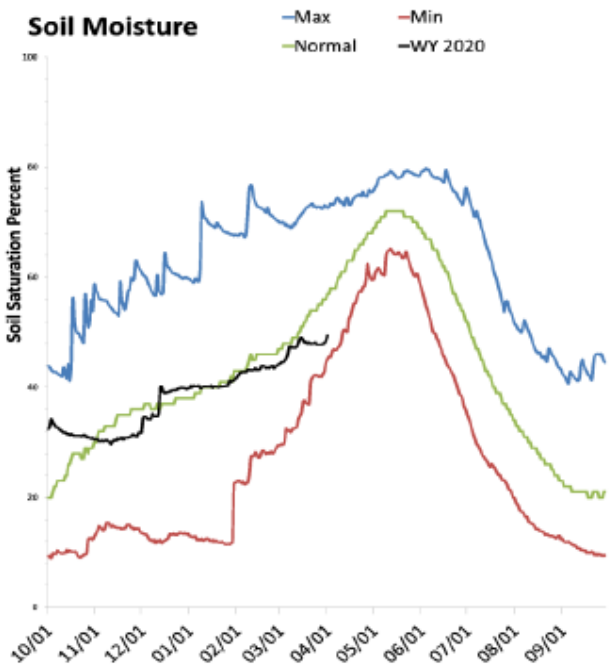
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

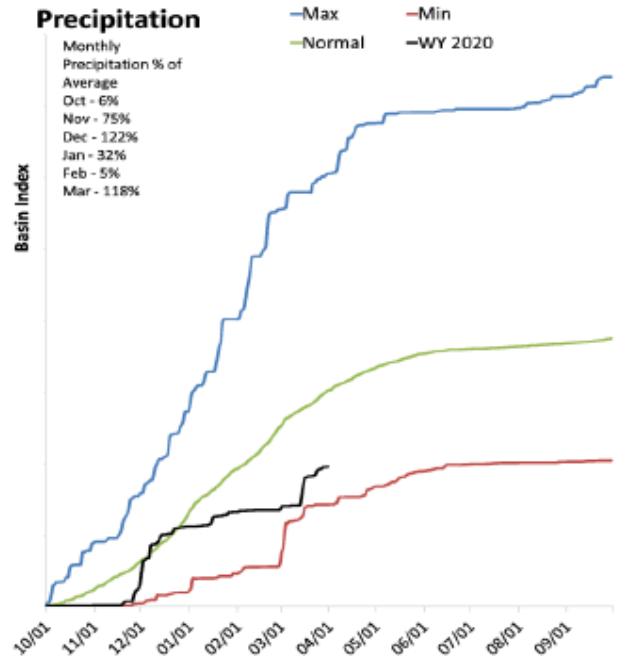
Carson River Basin

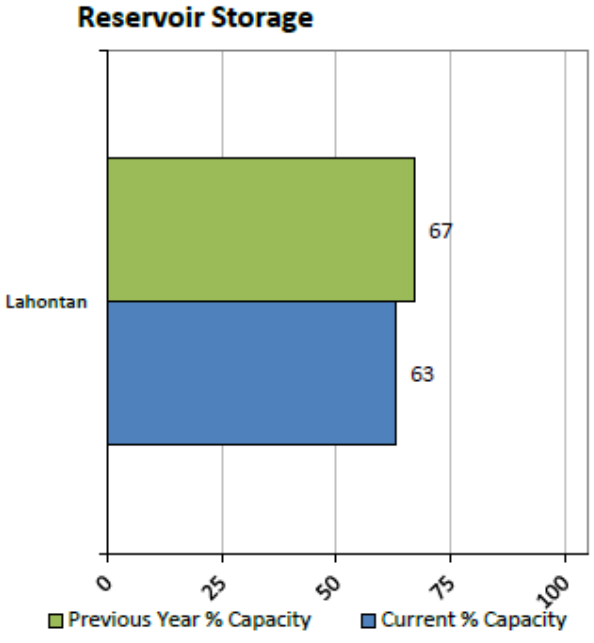
Including information from the Water Supply Outlook Report for Nevada
(https://www.nrcs.usda.gov/wps/portal/nrcs/main/nv/snow/):

Snowpack in the Carson River Basin is below normal at 76% of median, compared to 190% last year. Precipitation in March was above average, which brings the seasonal accumulation (Oct-Mar) to 64% of average. Soil moisture is at 49% saturation, compared to 51% last year. Storage in Lahontan Reservoir is 63% of capacity , compared to 67% last year. Forecast streamflow volumes for the East- and West Forks of the Carson River (April through July) are 60% and 59% of average, respectively.









Carson River Basin (cont'd)

CARSON RIVER BASIN
Streamflow Forecasts - April 1, 2020

Forecast Point / Forecast Period	Forecast Exceedance Probabilities for Risk Assessment: Chance that actual volume will exceed forecast — 90% (KAF)	70% (KAF)	50% (KAF)	(% AVG.)	30% (KAF)	10% (KAF)	30 Yr Avg (KAF)
EF Carson R nr Gardnerville							
APR-JUL	63	92	112	**60**	132	161	186
MAY-JUL	35	64	83	**55**	102	131	151
Date of 200 cfs flow[3]	06-Jun	16-Jun	23-Jun		30-Jun	10-Jul	25-Jul
Date of 500 cfs flow[3]	18-May	28-May	03-Jun		09-Jun	19-Jun	01-Jul
WF Carson R at Woodfords							
APR-JUL	15.1	25	32	**59**	39	49	54
MAY-JUL	7.6	19.9	28	**67**	36	49	42

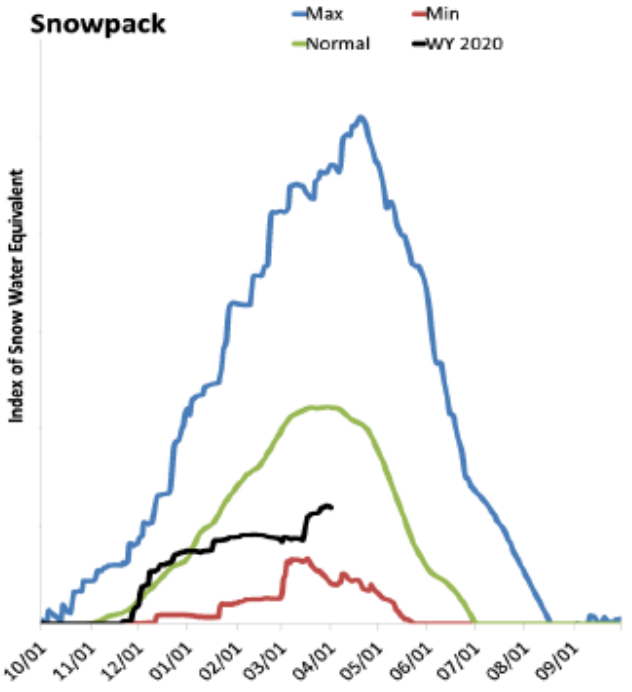
Averages are based on 1981-2010 reference period

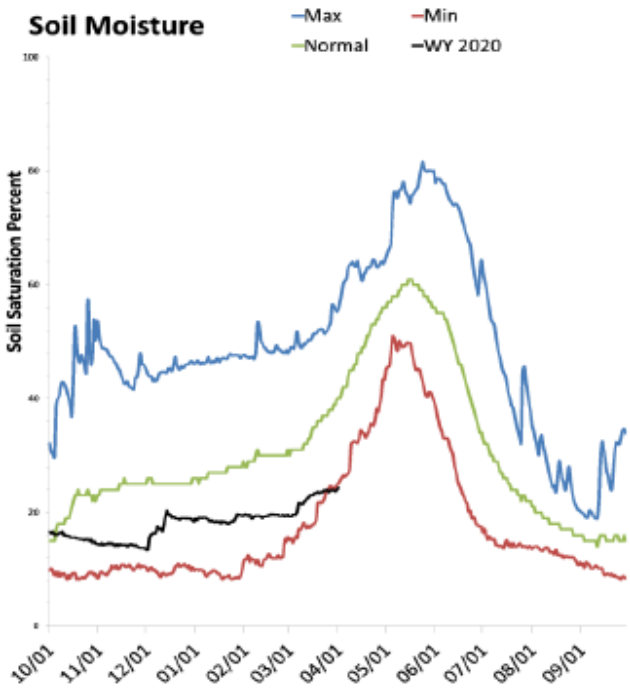
1) 90% and 10% exceedance probabilities are actually 95% and 5%
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
3) Julian Dates

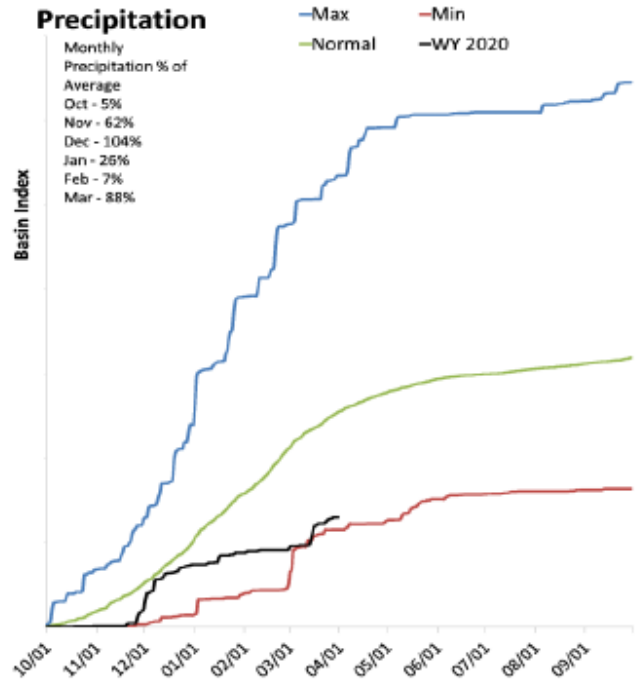
Walker River Basin

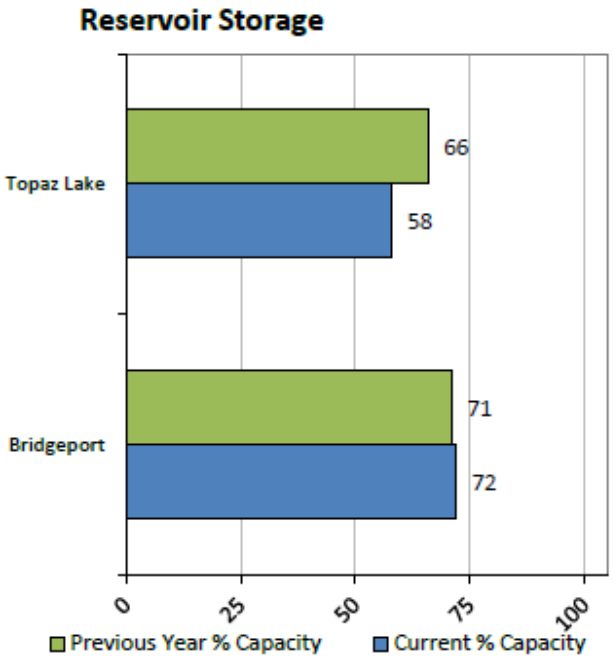
Including information from the Water Supply Outlook Report for Nevada (https://www.nrcs.usda.gov/wps/portal/nrcs/main/nv/snow/):

Snowpack in the Walker River Basin is much below normal at 51% of median, compared to 190% last year. Precipitation in March was below average, which brings the seasonal accumulation (Oct-Mar) to 51% of average. Soil moisture is at 24% saturation, compared to 25% last year. Combined reservoir storage is 64% of capacity , compared to 68% last year. Forecast streamflow volumes (April through July or August) range between 40% and 43% of average.









Walker River Basin (cont'd)

WALKER RIVER BASIN
Streamflow Forecasts - April 1, 2020

Forecast Point	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	(% AVG.)	30% (KAF)	10% (KAF)	30 Yr Avg (KAF)
		Forecast Exceedance Probabilities for Risk Assessment Chance that actual volume will exceed forecast						
E Walker R nr Bridgeport								
	APR-AUG	2	11.5	27	**40**	43	65	68
	MAY-AUG	1.1	7.6	20	**36**	32	51	55
W Walker R bl L Walker R nr Coleville								
	APR-JUL	14.3	47	70	**43**	93	126	162
	MAY-JUL	6.1	38	59	**42**	80	112	142
W Walker R nr Coleville								
	APR-JUL	19.3	50	70	**43**	90	121	163
	MAY-JUL	10.7	40	60	**42**	80	109	143

Averages are based on 1981-2010 reference period

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

Owens River Basin

DWR's streamflow forecast for the Owen's River from April through July is 151 thousand acre-feet, which is 65 percent of average.

OWENS RIVER BASIN
Streamflow Forecasts - April 1, 2020

Forecast Point	Forecast Period	Forecast Exceedance Probabilities for Risk Assessment: Chance that actual volume will exceed forecast — 90% (KAF)	70% (KAF)	50% (KAF)	50% (% AVG.)	30% (KAF)	10% (KAF)	30 Yr Avg (KAF)
Owens R	APR-JUL			151	**65**			231

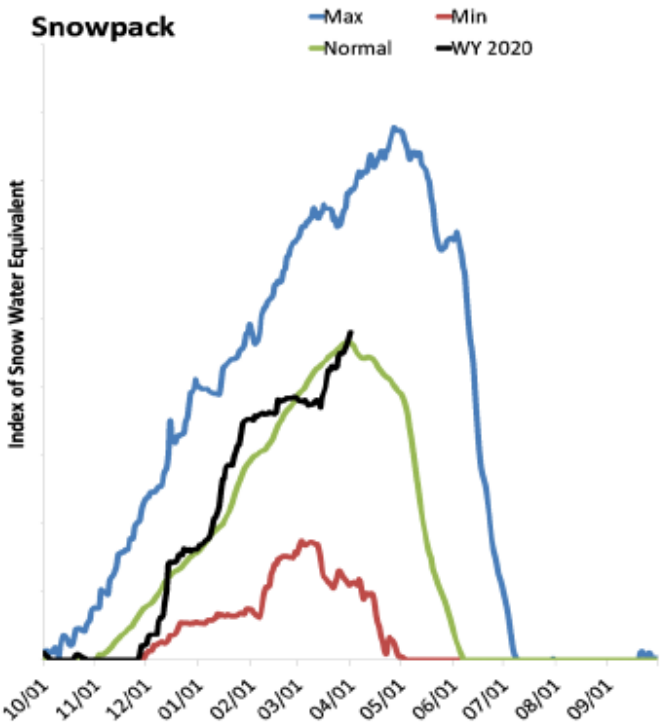
Averages are based on 1981-2010 reference period

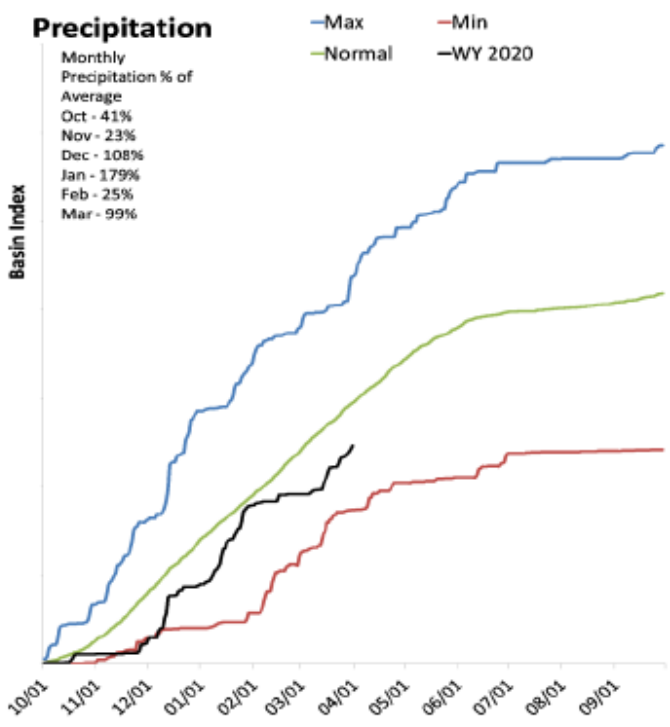
1) 90% and 10% exceedance probabilities are actually 95% and 5%
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

Surprise Valley- Warner Mountains

Provided by Jeff Anderson, Hydrologist, NRCS Nevada Snow Survey:

Snowpack in the Surprise Valley - Warner Mtns is above normal at 116% of median, compared to 163% last year. Precipitation in March was near average, which brings the seasonal accumulation (Oct-Mar) to 84% of average. Streamflow forecasts for Davis Creek, Bidwell Creek and Eagle Creek have been permanently discontinued until stream gaging can be re-established





Lower Colorado River Basin

Including information from the Water Supply Outlook Report for Nevada
(https://www.nrcs.usda.gov/wps/portal/nrcs/main/nv/snow/):

Reservoir storage in Lake Mead was at 44 percent of capacity at the end of March, up 725 thousand acre-feet (KAF) from this time last year when it was at 41 percent capacity. Snowpack in the Colorado River Basin above Glen Canyon Dam was 105 percent of the median, compared to 108 percent last year. The forecast streamflow volume for Lake Powell Inflow is 78 percent of average for April through July.

Reservoir Storage End of March, 2020	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Lake Mead	11602.0	10877.0	20450.0	26159.0
Lake Mohave	1708.0	1687.0	1687.0	1810.0
Basin-wide Total	13310.0	12564.0	22137.0	27969.0
# of reservoirs	2	2	2	2

Watershed Snowpack Analysis April 1, 2020	# of Sites	% Median	Last Year % Median
Spring Mountains	3	76%	268%
White River	6	73%	212%
Virgin River	8	138%	196%
Colorado R above Glen Canyon Dam	105	108%	134%

COLORADO RIVER BASIN
Streamflow Forecasts - April 1, 2020

Forecast Point / Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	(% AVG.)	30% (KAF)	10% (KAF)	30 Yr Avg (KAF)
	Forecast Exceedance Probabilities for Risk Assessment Chance that actual volume will exceed forecast						
Lake Powell Inflow							
APR-JUL	3500	4690	5600	**78**	6590	8190	7160

Averages are based on 1981-2010 reference period

1) 90% and 10% exceedance probabilities are actually 95% and 5%
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

How forecasts are made

Most of the annual streamflow in the western United States originates as snowfall that has accumulated in the mountains during the winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Measurements of snow water equivalent at selected manual snowcourses and automated SNOTEL sites, along with precipitation, antecedent streamflow, and indices of the El Niño / Southern Oscillation are used in computerized statistical and simulation models to prepare runoff forecasts. These forecasts are coordinated between hydrologists in the Natural Resources Conservation Service and the National Weather Service. Unless otherwise specified, all forecasts are for flows that would occur naturally without any upstream influences.

Forecasts of any kind, of course, are not perfect. Streamflow forecast uncertainty arises from three primary sources: (1) uncertain knowledge of future weather conditions, (2) uncertainty in the forecasting procedure, and (3) errors in the data. The forecast, therefore, must be interpreted not as a single value but rather as a range of values with specific probabilities of occurrence. The middle of the range is expressed by the 50% exceedance probability forecast, for which there is a 50% chance that the actual flow will be above, and a 50% chance that the actual flow will be below, this value. To describe the expected range around this 50% value, four other forecasts are provided, two smaller values (90% and 70% exceedance probability) and two larger values (30%, and 10% exceedance probability). For example, there is a 90% chance that the actual flow will be more than the 90% exceedance probability forecast. The others can be interpreted similarly.

The wider the spread among these values, the more uncertain the forecast. As the season progresses, forecasts become more accurate, primarily because a greater portion of the future weather conditions become known; this is reflected by a narrowing of the range around the 50% exceedance probability forecast. Users should take this uncertainty into consideration when making operational decisions by selecting forecasts corresponding to the level of risk they are willing to assume about the amount of water to be expected. If users anticipate receiving a lesser supply of water, or if they wish to increase their chances of having an adequate supply of water for their operations, they may want to base their decisions on the 90% or 70% exceedance probability forecasts, or something in between. On the other hand, if users are concerned about receiving too much water (for example, threat of flooding), they may want to base their decisions on the 30% or 10% exceedance probability forecasts, or something in between. Regardless of the forecast value users choose for operations, they should be prepared to deal with either more or less water. (Users should remember that even if the 90% exceedance probability forecast is used, there is still a 10% chance of receiving less than this amount.) By using the exceedance probability information, users can easily determine the chances of receiving more or less water.

This publication is posted with other Water Supply Outlook Reports for California at:
https://www.nrcs.usda.gov/wps/portal/nrcs/detail/ca/snow/.

For questions, contact Greg Norris, California NRCS, at Greg.Norris@usda.gov

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